

Appln. No. 09/753,591
Amendment dated February 2, 2006
Reply to Office Action mailed October 18, 2005

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims (deleted text being struck through and added text being underlined):

1. (canceled)

2. (canceled)

- 1 3. (currently amended) A suspension system for a motorcycle
2 comprising:
3 a. a motorcycle main frame;
4 b. a swing arm pivotally mounted to the motorcycle main frame about
5 a pivot axis;
6 c. at least one air-bag suspension system, the air-bag suspension
7 system forming a shock absorber which includes at least one air-bag
8 constructed of an elastomeric material, the air-bag is housed within a
9 housing assembly and is secured at one end to a piston located within the
10 housing assembly and is secured at an other end to an upper plate or end cap
11 of the housing assembly; and,
12 d. the shock absorber is attached at a forward end to ~~a cross member~~
13 ~~plate of~~ the motorcycle main frame and is pivotally attached at a rearward
14 end to a lower transverse cross member of the swing arm.

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1 4. (currently amended) A suspension system for a motorcycle
2 comprising:
3 [[[a.]]] a motorcycle main frame;
4 [[[b.]]] a swing arm pivotally mounted to the motorcycle main frame
5 about a pivot axis;
6 [[[c.]]] at least ~~two one~~ air-bag suspension ~~systems~~ system, the air-
7 bag suspension ~~systems~~ forming ~~two parallel~~ system including a shock
8 absorbers absorber which ~~include~~ includes at least one air-bag constructed
9 of an elastomeric material, the air-bag is housed within a housing assembly
10 and is secured at one end to a piston located within the housing assembly
11 and at an other end to an ~~upper plate~~ or end cap of the housing assembly
12 such that the piston, the end cap, and the air bag collective define an air
13 chamber within the housing for receiving and retaining air; and [[[,]]]
14 [[[d.]]] the shock absorber is attached at a forward end to a ~~cross~~
15 ~~member plate~~ of the motorcycle main frame and is pivotally attached at a
16 rearward end to a lower transverse cross member of the swing arm.

5. (cancelled)

6. (cancelled)

7. (cancelled)

1 8. (currently amended) The motorcycle of claim [[[6]]] 4, wherein the
2 air-bag suspension member includes air.

1 9. (previously presented) The motorcycle of claim 3, wherein the air
2 included in the air-bag suspension member is pressurized.

1 10. (currently amended) The motorcycle of claim 9, wherein a degree
2 of pressurization of the pressurized air in the air-bag suspension member is
3 adjustable.

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1 11. (currently amended) The motorcycle of claim 10, wherein
2 adjustment of the adjustable degree of pressurization of the pressurized air
3 in the air-bag suspension member alters ride height of the motorcycle.

1 12. (previously presented) The motorcycle of claim 8, wherein the air-
2 bag suspension member is characterized by a support spring force which is a
3 function of compression stroke.

1 13. (previously presented) The motorcycle of claim 12, wherein the
2 support spring force is a progressive function of compression stroke.

1 14. (previously presented) The motorcycle of claim 13, wherein the
2 support spring force is an exponential function of compression stroke.

1 15. (previously presented) The motorcycle of claim 14, wherein the air
2 in the air-bag suspension member can be pressurized to alter the support
3 spring force function of compression stroke.

1 16. (previously presented) The motorcycle of claim 15, wherein
2 increasing air pressure in the air-bag suspension member increases the
3 progressive function of support spring force to compression stroke.

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1 17. (currently amended) An air-bag suspension for replacement of a
2 stock coil spring suspension in a soft tail type motorcycle characterized by
3 a motorcycle main frame with a cross member plate and a swing arm, the
4 swing arm pivotably attached to the motorcycle frame and having a
5 transverse cross member, the stock coil spring suspension having a forward
6 end attached to the cross member plate and a rearward end pivotably
7 attached to the transverse cross member, the air-bag suspension for
8 replacement of a stock coil spring suspension comprising:

9 a. at least one air-bag constructed of elastomeric material, the air-bag
10 having a first end and a second end;

11 b. a housing assembly with an end cap, the housing assembly
12 enclosing the air-bag, and the first end of the air-bag secured to a piston
13 located within the housing assembly and the second end of the air-bag
14 secured to the end cap such that the piston, the end cap, and the air bag
15 collectively define an air chamber within the housing; and,

16 c. a shock absorber, the shock absorber having a forward end and a
17 rearward end, the shock absorber attached to the housing assembly and the
18 shock absorber attachable at the forward end to the cross member plate of a
19 motorcycle main frame and pivotably attachable at the rearward end to the
20 lower transverse cross member of the swing arm.

1 18. (currently amended) The air-bag suspension of claim 17, ~~wherein~~
2 ~~the motorcycle is a Harley Davidson SOFTAIL® motorcycle and the stock~~
3 ~~coil spring suspension is characterized by a spring force which is a linear~~
4 ~~function of shock stroke.~~

1 19. (previously presented) The air-bag suspension of claim 18,
2 wherein the air-bag suspension is characterized by a spring force which is a
3 progressive function of shock stroke.

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1 20. (previously presented) The air-bag suspension of claim 17,
2 wherein the air-bag suspension includes air.

1 21. (previously presented) The air-bag suspension of claim 20,
2 wherein the air included in the air-bag suspension is pressurized.

1 22. (previously presented) The air-bag suspension of claim 21,
2 wherein the pressurized air in the air-bag member is adjustable.

1 23. (previously presented) The air-bag suspension of claim 22,
2 wherein adjustment of the adjustable pressurized air in the air-bag
3 suspension alters ride height of a motorcycle employing the air-bag
4 suspension.

1 24. (previously presented) The air-bag suspension of claim 20,
2 wherein the air-bag suspension is characterized by a support spring force
3 which is a function of compression stroke.

1 25. (previously presented) The air-bag suspension of claim 24,
2 wherein the support spring force is a progressive function of compression
3 stroke.

1 26. (previously presented) The air-bag suspension of claim 25,
2 wherein the support spring force is an exponential function of compression
3 stroke.

1 27. (previously presented) The air-bag suspension of claim 26,
2 wherein the air in the air-bag suspension member can be pressurized to alter
3 the support spring force function of compression stroke.

1 28. (previously presented) The air-bag suspension of claim 27,
2 wherein increasing air pressure in the air-bag suspension increases the
3 progressive function of support spring force to compression stroke.

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1 29. (currently amended) The air-bag suspension of claim 17, wherein
2 the air-bag is one of a pair of air bag suspensions for replacing replaces a
3 pair of stock coil spring suspensions suspension.

1 30. (previously presented} The air-bag suspension pair of claim 29,
2 wherein the pair are connected to an air compressor.

1 31. (currently amended) In a soft tail type motorcycle, the
2 improvement comprising a replacing the stock coil spring suspension pair
3 with an air-bag suspension pair, the air bag suspension including a housing
4 with an interior, a piston movable in the interior of the housing, an air bag
5 positioned in the interior of the housing, the air bag being securely attached
6 to an interior of the housing and to the piston to define an air chamber.

1 32. (new) A suspension device for connecting to a frame of a vehicle
2 and a swing arm on which a wheel of the vehicle is mounted, the suspension
3 device comprising:

4 a housing defining an interior;
5 a shock absorber mounted on the housing, the shock absorber
6 including a rod movably mounted on the housing such that at least a portion
7 of the rod extends into the interior of the housing and through the housing;
8 a piston positioned in the interior of the housing and being mounted
9 on the rod of the shock absorber to move with the rod;
10 an air-bag positioned within the interior of the housing, the air bag
11 being constructed of elastomeric material, the air-bag having a first end
12 mounted on the housing in the interior of the housing and a second end
13 mounted on the piston and a second end such that the piston, the housing,
14 and the air bag collectively define an air chamber within the housing.

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1 33. (New) The suspension device of claim 32 wherein the air
2 bag includes a perimeter wall with a pair of opposite ends, a first one
3 of the opposite ends of the perimeter wall being mounted on the
4 housing and a second one of the opposite ends of the perimeter wall
5 being mounted on the piston.

1 34. (New) The suspension device of claim 33 wherein each of
2 the opposite ends of the perimeter wall includes a perimeter flange
3 defining an opening, the perimeter flange at a first one of the opposite
4 ends being secured to the housing and the perimeter flange at a second
5 one of the opposite ends being secured to the piston.

1 35. (New) The suspension device of claim 33 wherein each of
2 the opposite ends of the perimeter wall define an opening, a first one
3 of the openings of the perimeter wall receiving a portion of an end cap
4 of the housing and a second one of the openings of the perimeter wall
5 receiving a portion of the piston.

1 36 (New) The suspension device of claim 35 wherein the end
2 cap seals the opening in the first end of the perimeter wall and the
3 piston seals the opening in the second end of the perimeter wall.

1 37. (New) The suspension device of claim 32 wherein the shock
2 absorber includes a hydraulic piston and cylinder, the cylinder being
3 mounted on the housing and the piston being mounted on the rod, the
4 rod being configured to mount on one element of the frame and the
5 swing arm and the cylinder being configured to mount on the other
6 element of the frame and the swing arm.